U.S. Fish & Wildlife Service

Fish Lines

Region 3 - Great Lakes/Big Rivers

Leadership in Conserving, Enhancing, and Restoring Aquatic Ecosystems

October 2004
Vol. 3 No.1

Green Bay Fishery Resources Office

(See the "*Station Spotlight*" on Page 5)

-USFWS photos

Series of photos depicting Green Bay Fishery Resources Office (FRO) activities: (Top Row, Lt. to Rt.) Green Bay FRO's Lake Michigan assessment vessel "Lake Char"; Green Bay FRO/Ecological Services office building in New Frankin, Wisconsin; Conducting lake sturgeon status assessment in the Menominee River; (Middle Row) Rob Elliott explains lake sturgeon rehabilitation at an outreach event; The Lake Sturgeon Task Group meets to coordinate activities; FRO staff participates in Oneida Nation Kids Fishing Day; (Bottom Row) John Netto developing models to assist managers in setting safe lake whitefish harvest levels; Fall lake trout spawning assessments are used to monitor rehabilitation efforts in Lake Michigan; Dale Hanson ages lake whitefish scales.

To view other issues of "Fish Lines", see our Regional website at: (http://midwest.fws.gov/Fisheries/)

Region 3 - Great Lakes/Big Rivers Region

The Mission of the U.S. Fish & Wildlife Service: working with others to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people

Region 3 Focus Areas

1. Partnerships and Accountability

Partnerships are essential for effective fisheries conservation. Many agencies, organizations, and private individuals are involved in fisheries conservation and management, but no one can do it alone. Together, these stakeholders combine efforts and expertise to tackle challenges facing fisheries conservation. The success of these partnerships will depend on strong, two-way communications and accountability.

2. Aquatic Species Conservation and Management

The Fisheries Program maintains and implements a comprehensive set of tools and activities to conserve and manage self-sustaining populations of native fish and other aquatic resources. These tools and activities are linked to management and recovery plans that help achieve restoration and recovery goals, provide recreational benefits, and address Federal trust responsibilities. Sound science, effective partnerships, and careful planning and evaluation are integral to conservation and management efforts.

3. Aquatic Invasive Species

Aquatic invasive species are one of the most significant threats to fish and wildlife and their habitats. Local and regional economies are severely affected with control costs exceeding $123 billion annually. The Fisheries Program has focused its efforts on preventing introductions of new aquatic invasive species, detecting and monitoring new and established invasives, controlling established invasives, providing coordination and technical assistance to organizations that respond to invasive species problems, and developing comprehensive, integrated plans to fight aquatic invasive species.

4. Public Use

As the population in the United States continues to grow, the potential for adverse impacts on aquatic resources, including habitat will increase. At the same time, demands for responsible, quality recreational fishing experiences will also increase. The Service has a long tradition of providing opportunities for public enjoyment of aquatic resources through recreational fishing, habitat restoration, and education programs and through mitigating impacts of Federal water projects. The Service also recognizes that some aquatic habitats have been irreversibly altered by human activity (i.e. - dam building). To compensate for these significant changes in habitat and lost fishing opportunities, managers often introduce non-native species when native species can no longer survive in the altered habitat.

5. Cooperation with Native Americans

Conserving this Nation's fish and other aquatic resources cannot be successful without the partnership of Tribes; they manage or influence some of the most important aquatic habitats both on and off reservations. In addition, the Federal government and the Service have distinct and unique obligations toward Tribes based on trust responsibility, treaty provisions, and statutory mandates. The Fisheries Program plays an important role in providing help and support to Tribes as they exercise their sovereignty in the management of their fish and wildlife resources on more than 55 million acres of Federal Indian trust land and in treaty reserved areas.

6. Leadership in Science and Technology

Science and technology form the foundation of successful fish and aquatic resource conservation and are used to structure and implement monitoring and evaluation programs that are critical to determine the success of management actions. The Service is committed to following established principles of sound science.

7. Aquatic Habitat Conservation and Management

Loss and alteration of aquatic habitats are principal factors in the decline of native fish and other aquatic resources and the loss of biodiversity. Seventy percent of the Nation's rivers have altered flows, and 50 percent of waterways fail to meet minimum biological criteria.

8. Workforce Management

The Fisheries Program relies on a broad range of professionals to accomplish its mission: biologists, managers, administrators, clerks, animal caretakers, and maintenance workers. Without their skills and dedication, the Fisheries Program cannot succeed. Employees must be trained, equipped and supported in order to perform their jobs safely, often under demanding environmental conditions, and to keep current with the constantly expanding science of fish and aquatic resource management and conservation.

The vision of the Service's Fisheries Program is working with partners to restore and maintain fish and other aquatic resources at self-sustaining levels and to support Federal mitigation programs for the benefit of the American public.

Implementing this vision will help the Fisheries Program do more for aquatic resources and the people who value and depend on them through enhanced partnerships, scientific integrity, and a balanced approach to conservation.

Inside this Issue

Click here to visit our Fisheries Web Site

Great Lakes - Big Rivers Region Fisheries Field Offices

National Fish Hatcheries

The Region's National Fish Hatcheries primarily focus on native fish restoration/ rehabilitation by stocking fish and eggs, such as pallid and lake sturgeon and by developing and maintaining brood stocks of selected fish strains, such as lake trout and brook trout. Hatcheries also provide technical assistance to other agencies, provide fish and eggs for research, stock rainbow trout in fulfillment of federal mitigation obligations and assist with recovery of native mussels and other native aquatic species.

Sea Lamprey Control Stations

Sea Lamprey Control Stations assess and control sea lamprey populations throughout the Great Lakes. The U.S. Department of State and Canadian Department of Fisheries and Oceans fund this program through the Great Lakes Fishery Commission.

Fishery Resources Offices

Fishery Resources Offices conduct assessments of fish populations to guide management decisions, perform key monitoring and control activities related to invasive, aquatic species; survey and evaluate aquatic habitats to identify restoration/rehabilitation opportunities; play a key role in targeting and implementing native fish and habitat restoration programs; work with private land owners, states, local governments and watershed organizations to complete aquatic habitat restoration projects under the Service's Partners for Fish and Wildlife and the Great Lakes Coastal Programs; provide coordination and technical assistance toward the management of interjurisdictional fisheries; maintain and operate several key interagency fisheries databases; provide technical expertise to other Service programs addressing contaminants, endangered species, federal project review and hydropower operation and re-licensing; evaluate and manage fisheries on Service lands; and, provide technical support to 38 Native American tribal governments and treaty authorities. In other Regions of the Service, FRO's are also referrred to as Fish and Wildlife Management Assistance Offices.

Fish Health Center

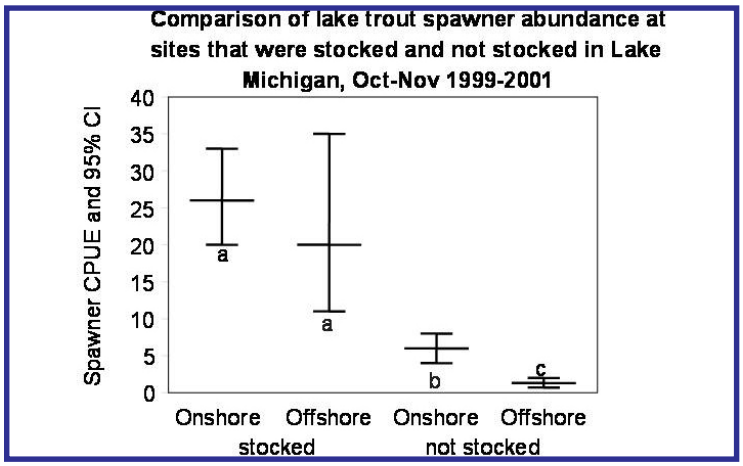
The Fish Health Center provides specialized fish health evaluation and diagnostic services to federal, state, tribal and private hatcheries in the region; conducts extensive monitoring and evaluation of wild fish health throughout the region; examines and certifies the health of captive hatchery stocks; and, performs a wide range of special services helping to coordinate fishery program offices and partner organizations.

Great Lakes - Big Rivers Region Fisheries Field Offices

Station Spotlight - Green Bay Fishery Resources Office

The Green Bay Fishery Resources Office (FRO), established in 1992, is responsible for fishery technical and management assistance and science leadership within the Lake Michigan watershed. The Green Bay FRO works with 11 Tribal governments, one National Wildlife Refuge, and four States. The achievement of the fish community objectives for Lake Michigan, and restoration and assessment of native fish and their habitats are the primary focus of the Green Bay FRO with emphasis on lake trout, lake sturgeon, lake whitefish, and yellow perch.

Delivering a lake trout rehabilitation program is a primary goal of the Green Bay FRO. Staff serves as the Fish and Wildlife Service representative on the Lake Michigan Technical Committee and as chair of the Lake Michigan Lake Trout Task Group, coordinates with National Fish Hatcheries to achieve stocking goals, conducts field surveys, and coordinates or assists with the analysis of interagency generated survey data to evaluate the success of rehabilitation strategies. For example, the office led the analysis of the effectiveness of stocking lake trout over nearshore and offshore spawning reefs which confirmed that greater numbers of spawners were established on stocked reefs versus reefs that were not stocked.



These and other lakewide analyzes of assessment data, combined with a description of impediments to rehabilitation, will guide the revision of the rehabilitation plan for lake trout in Lake Michigan.

Lake sturgeon is another focus species for the Green Bay FRO. Staff chairs the Lake Michigan Lake Sturgeon Task Group that is charged to develop a sturgeon rehabilitation plan for Lake Michigan. The office conducts or coordinates field work to describe the status and genetic characteristics of remnant

-USFWS **Green Bay Fishery Resources Office Staff**
Left to Right: Dale Hanson, Rob Elliott, Mark Holey, Chuck Bronte, John Netto, Not pictured - Stewart Cogswell

populations in Green Bay and Lake Michigan, and works with other agencies to coordinate research efforts.

Providing technical assistance to Native American Tribes is an important Federal trust responsibility for the Green Bay FRO. Implementation of the 2000 Consent Decree in the 1836 Treaty waters of lakes Michigan, Superior, and Huron, among five Chippewa/ Ottawa tribal governments and the State of Michigan is a major activity for the Green Bay FRO and the Fish and Wildlife Service. Staff serves as members on technical and modeling committees that determines safe harvest limits for lake trout and lake whitefish and provides oversight on Decree implementation. Biologists also provide management assistance to the Wisconsin tribes of Oneida, Stockbridge-Munsee, and Forest County Potowatomi.

Rounding out the activities of the Green Bay FRO includes restoring fish habitat, surveying aquatic invasive species populations, implementing restoration activities through the Lower Green Bay/ Fox River Natural Resource Damage Assessment process, serving on the sea lamprey research committee, and serving on the Great Lakes Fishery Trust.

The station supports the Great Lakes Fish and Wildlife Restoration Act and native species restoration with partners and publishes results in professional journals and internal reports.

For detailed information about the Green Bay Fishery Resources Office, contact the office at (920) 866-1717 or visit the Regional website at: http://midwest.fws.gov/Fisheries/fisheryoffices.htm.

Partnerships and Accountability

Lampricide Treatment in the Carp Lake River will comply with the Endangered Species Act

Sea lamprey management staff and personnel from the East Lansing Field Office completed an Intra-Service Section 7 Biological Evaluation and Biological Opinion for a proposed lampricide treatment in the Carp Lake River in Emmet County, Michigan during October 2004. Through the section 7 process, the two offices worked together to develop a chemical treatment strategy that would kill approximately 95% of the estimated 136,000 larvae and 1,400 transforming sea lampreys in the Carp Lake River, while minimizing the adverse effects to listed species. The treatment strategy was developed to protect, minimize adverse effects, and avoid disturbance to the Federally-listed endangered Hungerford's crawling water beetle and threatened Pitcher's thistle in or near the Carp Lake River in accordance with the Endangered Species Act of 1973, as amended.

The sea lamprey program continues to work closely with partners to control populations of sea lampreys in tributaries of the Great Lakes to protect the fishery and related economic activities in the basin (an estimated benefit of $4-6 billion/year to the region). The Fish and Wildlife Service delivers a program of integrated sea lamprey control in the United States waters of the Great Lakes as a contracted agent of the Great Lakes Fishery Commission.
John Weisser, Marquette Biological Station

-GLFC **Hungerford's Crawling Water Beetle**

Sea Lamprey Control and East Lansing Field Office staff completed a Section 7 Biological Evaluation and Biological Opinion for a proposed lampricide treatment in the Carp Lake River in Emmet County, Michigan. The treatment strategy will kill approximately 95% of the estimated 136,000 invasive sea lamprey larvae and 1,400 transforming adults while minimizing the adverse effects on the endangered Hungerford's crawling water beetle.

Partnership with Kansas State University to analyze Long-term Data Set

Biologist Wyatt Doyle from the Columbia Fishery Resources Office (FRO) and U.S. Geological Survey (USGS) Kansas State Assistant Cooperative Unit Leader Dr. Craig Paukert began to cooperatively analyze a long-term Missouri River pallid sturgeon data set. Information from these analyses will enhance abilities of researchers to quantitatively define gear efficiency, habitat selectivity, and complex ecological functions related to important Missouri River fishes. Initial analyses will be reported at upcoming Missouri River conferences. Partnerships are essential for effective fisheries conservation and management. The combined efforts of the Columbia FRO and USGS will enable the agencies to more efficiently tackle the challenges facing pallid sturgeon recovery on the Missouri River. This project will assist the Fish and Wildlife Service's Fishery Program with meeting its Partnership and Accountability goal of developing collaborative conservation strategies for aquatic resources.
Wyatt Doyle, Columbia FRO

-USFWS

Wyatt Doyle holds an adult endangered pallid sturgeon captured in a Missouri River assessment. Columbia Fishery Resources Office is partnering with Kansas State University to analyze the long-term Missouri River pallid sturgeon data set to more efficiently manage recovery activitites.

Iron River finds Friends

Iron River National Fish Hatchery (NFH) has found some friends! A group of people interested in the hatchery have formed the "Friends of Iron River National Fish Hatchery." This group plans to be active in developing the surrounding property for nature trails, increasing public awareness, and assisting the hatchery with educational programs. The group has been meeting approximately once a month since July. Papers have been filed to obtain their non-profit status and the group has

elected officers and assigned duties. They are excited about the possibilities for the hatchery property and are now beginning to look for more friends! Anyone interested in more information about the group may contact the hatchery at 715/372-8510.
Angela Baran, Iron River NFH

Stakeholder Meetings held regarding St. Marys River Fishery

The St. Marys River Fishery Task Group (Task Group) held two stakeholder meetings to educate the public about coordinated activities conducted by the group to assess harvest of certain fish and the fish community in the St. Marys River. The meetings also addressed future efforts of the Task Group. The meetings were held at the Lake Superior State University Cisler Center in Sault Ste. Marie, Michigan and at the Sault College of Applied Arts and Technology in Sault Ste. Marie, Ontario. Presentations were provided by the Michigan Department of Natural Resources (DNR) on behalf of the Task Group that summarized assessment projects. The U.S. Department of Agriculture Wildlife Services Unit provided a presentation on their cormorant control activities in Northern Lake Huron and the St. Marys River at the Michigan meeting. News interviews were conducted by the Sault Evening News in Michigan and the Sault Star and EZRock/Q104 in Ontario. Alpena Fishery Resources Office (FRO) and other Task Group members including the Ontario Ministry of Natural Resources, Michigan DNR, Chippewa Ottawa Resource Authority, Bay Mills Indian Community, Lake Superior State University, Department of Fisheries and Oceans Canada, and Sault College of Applied Arts and Technology took part in the meeting.

The Task Group is a multi-agency and multi-national group that was established in 1997 by the Great Lakes Fishery Commission's Lake Huron Committee to develop a coordinated assessment and review program for the St. Marys River fish community and its associated habitats. Anjanette Bowen of the Alpena FRO currently chairs the group. A number of joint projects have been accomplished by the group that has provided an improved knowledge base of the fish and fishery in the St. Marys River. Several of the reports have been published and are posted on the Great Lakes Fishery Commission web site (http://www.glfc.org/lakecom/lhc/lhchome.asp#pub).
Anjanette Bowen, Alpena FRO

-USFWS photo by Anjanette Bowen

Alpena Fishery Resources Office (FRO) participated in a stakeholder meeting held by the St. Marys River Fishery Task Group in Sault Ste. Marie, Michigan.

Fish and Wildlife Service Biologist presents at Council of Lake Committees Meeting

Biologist Aaron Woldt from the Alpena Fishery Resources Office (FRO) attended the Great Lakes Fishery Commission of Lake Committees Meeting in Romulus, Michigan. Woldt delivered a "Statistical Catch at Age (SCAA) Model Evaluation Techniques" presentation. Other presentations were given by a panel of experts, and the goal was to give fisheries managers a better understanding of SCAA techniques and procedures, staffing needs, data needs, model assumptions, model limitations, model results, and model evaluation techniques. Case studies of applications in the Great Lakes such as lake trout and lake whitefish in 1836 Treaty Waters and yellow perch in Southern Lake Michigan were discussed.

Woldt's talk covered evaluation techniques such as comparing observed parameter values versus model predicted estimates, examination of model generated standard deviation estimates of parameters, model sensitivity to changes in initial parameter values, plots of model estimated parameter residuals, Markov Chain Monte Carlo simulations, retrospective analyses, and biological intuition.

Personnel from state, Federal, provincial and tribal fisheries management agencies throughout the Great Lakes attended the workshop. Participant feedback indicated that the presentations were extremely helpful and gave them a good, basic understanding of SCAA that will allow them to better communicate modeling results (e.g. harvest quotas) and resource implications (e.g. trends in standing stock biomass) to staff members and stake holders.
Aaron Woldt, Alpena FRO

Missouri River Natural Resources Committee Annual Meeting

Project Leader Tracy Hill attended the fall meeting of the Missouri River Natural Resources Committee. Meeting participants heard reports from state natural resource agencies regarding their river activities during the previous field season. Participants also observed adult pallid sturgeon brood stock being stocked in the Missouri River and attended a field trip to assist the North Dakota Game and Fish Department with paddlefish tagging efforts. Additional points of interest from the meeting included a Montana presentation regarding work conducted on soft shell turtles and many discussions regarding aquatic invasive species. Columbia Fishery Resources Office (FRO) participation in this meeting is an example of inter-regional collaboration to improve information sharing and optimize fishery management and protection on the Missouri River. This effort assists the Columbia FRO in fulfilling the Fisheries Program's Strategic Vision priorities for "Public Use" and "Partnership and Accountability".
Tracy Hill, Columbia FRO

Missouri River Partnership Briefings

Jennifer Johnson of the Columbia Fishery Resources Office (FRO) attended the Missouri River Briefings held at the Columbia Environmental Research Center in Columbia, Missouri. Graduate students from the University of Missouri along with researchers from the Fish and Wildlife Service, U.S. Geological Survey, and Missouri Department of Conservation presented updates and summaries of ongoing Missouri River projects. Participants were exposed to the wide range of research occurring on the Lower Missouri River. Jennifer gave a brief description of her project proposal at the meeting. Participants gained a better understanding of the many aspects of research occurring through question and answer sessions.
Jennifer Johnson, Columbia FRO

Illinois Comprehensive Wildlife Conservation Plan coming Together

Rob Simmonds from the Carterville Fishery Resources Office (FRO) participated in a workshop on the Comprehensive Wildlife Conservation Plan being developed by the Illinois Department of Natural Resources (DNR) and its partners. Once completed, this plan will serve as a guiding document for the conservation, restoration, and effective management of all fish and wildlife in Illinois. Based on extensive information that Illinois DNR compiled, major "stressors" were identified allowing them to identify causes and remedies for them. In the end, this plan will be used to prioritize projects in the state to address major stresses for the benefit of all wildlife. Other participants included the U.S. Forest Service, Wildlife Society, Sierra Club, Audubon, and The Nature Conservancy. The presentation that was given and more information can be found at http://dnr.state.il.us/orc/wildliferesources/theplan/ or you can call Jeff Walk, Illinois DNR, at (217)782-6384.
Rob Simmonds, Carterville FRO

Green Bay Fishery Resources Office helps the Environmental Protection Agency monitor Contaminants in Lake Michigan

The Green Bay Fishery Resources Office (FRO) assisted the Environmental Protection Agency's (EPA) Great Lakes Contaminant Monitoring Program by collecting lake trout from Saugatuck Reef in Lake Michigan. A total of 50 lake trout within a narrow size range, 23.6-27.6 inches, were collected with gill-nets. These fish were sent to specialized labs that utilize a gas chromatograph to detect levels of harmful contaminants such as PCB's (polychlorinated biphenyls) and DDT (dichlorodiphenyltrichloroethane) within the flesh of the fish. High levels of these contaminants can limit reproductive success in bird and fish populations and pose risks to top predators in the food chain, including people. The EPA has monitored contaminant levels in Lake Michigan lake trout since 1969 and relies on the Fish and Wildlife Service and other organizations for fish collections to continue this important time-series data set.
Dale Hanson, Green Bay FRO

Aquatic Species Conservation and Management

Multiple Pallid Sturgeon collected in Single Trawl Haul

The Columbia Fishery Resources Office (FRO) hosted Dr. Craig Paukert, Kansas State Co-Op Assistant Unit Leader. Dr. Paukert spent the day trawling with Corey Lee and Wyatt Doyle on the Missouri River at Franklin Island, downstream of Boonville, Missouri. Otter and beam trawls are standard gear types in the protocol for the "Pallid Sturgeon and Associated Fish Community Assessment Project" which is funded by the U.S. Army Corps of Engineers. During the sampling, two endangered pallid sturgeon, one juvenile (14.9 inches) and one fingerling (5.2 inches), were captured in one of the otter trawl hauls. Both pallids were hatchery reared and had elastomer tags in the rostrum. The juvenile pallid also had a passive integrated transponder (PIT) tag. This was the first time the Columbia FRO has captured two pallid sturgeon in one single haul for any gear type. This was also the first fingerling pallid sturgeon the Columbia FRO has captured. Work on this project allows the FRO to help the Fish and Wildlife Service's Fishery Program achieve its goal to identify priority actions to eliminate the threats causing declines of native fish species. *Corey Lee, Columbia FRO*

-USFWS

Dr. Craig Paukert, Kansas State Cooperative Fisheries Unit, holds an endangered fingerling pallid sturgeon collected in the Missouri River. The assessment is part of the Pallid Sturgeon Recovery Plan.

Young of the Year and Juvenile Sturgeon Collected

Biological Technician Corey Lee and Biologist Wyatt Doyle sampled the Missouri River with otter trawls at two bends near Glasgow, Missouri. An abnormally large percentage of juvenile and young-of-year shovelnose sturgeon were captured. Fourteen of the 47 shovelnose sturgeon sampled were juveniles ranging in length from 4.7-18.9 inches, while eight were young of the year (2 inch) fish. All of the sturgeon were collected in one trawl ranking as the highest number ever collected in a trawl tow. The presence of these sizes and numbers of fish which are otherwise only occasionally sampled, suggests this area may offer some measure of habitat not available in other parts of the river. Sicklefin chubs and eight rare blue suckers were also captured during the sampling. *Corey Lee, Columbia FRO*

Mid-lake Lake Trout Survey

Staff from the Alpena Fishery Resources Office (FRO) completed a mid-lake lake trout spawning survey on Six Fathom Bank and Yankee Reef. Due to scheduled repair work on the M/V Togue, the 2004 survey was completed using the U.S. Geological Survey vessel R/V Grayling and crew, Captain Ed Perry and Engineer Bill Boyle. The goal of this survey was to collect abundance and biological data of spawning lake trout at index stations at two mid-lake reef complexes. The Fish and Wildlife Service has stocked hundreds of thousands of lake trout yearlings on these two off-shore reefs in recent years.

Three 400' long, large-mesh gill nets were set on Six Fathom Bank, and two 400' long, large-mesh nets were set on Yankee Reef. All lake trout collected were measured for length, weighed, checked for lamprey wounds, sexed, assessed for maturity and visceral fat content, and sampled for aging structures. Non-target fish species were assessed in a similar manner. The Alpena FRO has conducted the annual mid-lake lake trout spawning surveys on these reefs since 1993.

In 2004, catch rates were down at the north and middle Six Fathom Bank sites and up at the south site compared to 2002 data. At Yankee Reef, catch rates were up slightly at the northern site and equal at the southern site compared to 2002 data. This survey was not conducted in 2003 due to inclement weather. In 2004, catch rates were above 100 spawners/1000 feet of net at the southern Six Fathom Bank sites and both Yankee Reef sites. Catch rates were close to

100 spawners/1000 feet of net at the north and middle Six Fathom Bank sites. Fifty spawners/1000 feet of net is the mean abundance of spawners needed to support a viable, naturally reproducing lake trout population at other sites in the Great Lakes. Also, the presence of unclipped, presumably wild fish at each of the 5 sites in 2004 is a positive sign of natural recruitment.

Monitoring the abundance, stability, and quality of spawning lake trout populations on Six Fathom Bank and Yankee Reef is an important index of lake trout rehabilitation in Lake Huron. Six Fathom Bank and Yankee Reef were historically important lake trout spawning sites. This outcome is consistent with the Fish and Wildlife Service goal of maintaining self-sustaining populations of native fish species under the "Aquatic Species Conservation and Management" priority of the Fisheries Program Vision for the Future.

Aaron Woldt, Alpena FRO

-USFWS photo by Aaron Woldt

Alpena Fishery Resources Office biologists Aaron Woldt, Scott Koproski, and Adam Kowalski set gill nets to capture lake trout from Lake Huron during the mid-lake lake trout survey.

Island Destination

A cooperative effort between the staff at Iron River National Fish Hatchery (NFH), Ashland Fishery Resources Office, Genoa NFH, and the National Park Service allowed for the stocking of 57,600 coaster brook trout fingerlings into the waters around Isle Royale National Park. Nick Grueneis from Iron River along with Nick Starzl from Genoa NFH loaded trucks with the fingerling brook trout and met the National Park Service staff in Houghton, Michigan. The fish were stocked into the Siskiwit Bay area on Isle Royale using the National Park Service vessel, the Ranger. These fish are a part of an ongoing effort to restore the depleted coaster brook trout population in Lake Superior. Iron River NFH maintains several year classes of Isle Royale coaster brook trout brood fish collected from Siskiwit Bay and Tobin Harbor.

Angela Baran, Iron River NFH

Pallid Sturgeon stocked in the Missouri River

Endangered pallid sturgeon were successfully stocked into the Missouri River. Leavenworth, Kansas was stocked with 9,990 fish (9,170 3-5 inch fish, 820 9 inch fish) on September 6th and 7th; Bellevue, Nebraska was also stocked with 6,634 fish on September 6th; and Booneville, Missouri was stocked with 9,761 fish on September 6th. The pallid sturgeon were raised at Neosho and Garrison Dam National Fish Hatcheries. The fish were tagged with Passive Integrated Transponder (PIT) tags, coded wire tags, and elastomer tags, which will allow the fish to be identified as stocked fish. Tracy Hill, Project Leader at the Columbia Fishery Resources Office (FRO), coordinated the hatchery stocking for the Fish and Wildlife Service with state agencies.

This stocking is a partnership effort, that includes many other agencies, to recover pallid sturgeon from endangered status. Columbia FRO staff hope to recapture these stocked fish during fall trawl and winter gill net sampling to determine fish health, movement, and habitat preference. Activities associated with pallid sturgeon enables the Columbia FRO to fulfill the Fisheries Program's Strategic Vision priorities for "Aquatic Species Conservation and Management" and "Partnership and Accountability." This work also allows the Fish and Wildlife Service to recover endangered species by utilizing sound science, effective partnerships, and careful planning.

Tracy Hill, Columbia FRO

Fishery Surveys conducted at Fox River and Horicon National Wildlife Refuges

Shawn Papon was quite happy to witness the diversity of fish found on the Fox River National Wildlife Refuge (NWR). Earlier in the year, Shawn contacted the La Crosse Fishery Resources Office (FRO) and requested a fishery survey be conducted on the Refuge. Scott Yess, La Crosse FRO, assisted Refuge staff on sampling both Fox River and Horicon NWR's. A diversity of habitats including an oxbow lake, backwater, cool water stream, and river were sampled at Fox River. Twenty-eight species were collected by electrofishing and netting. The oxbow lake contained a good population of bluegill, crappie, and largemouth bass

which should make this a great site for the proposed fishing pier. This was the first time a fishery survey was conducted at Fox River and will help managers set goals and write a fishery management plan.

Horicon NWR however, is dominated by carp and bullhead. These fish species cause an increase in turbidity and reduce aquatic plant growth. These species are not heavily fished and create a management problem for the Refuge. A carp trap is being maintained by the NWR staff and annual stocking of northern pike and pan fish is helping; however, it is still a constant battle to reduce carp and bullhead numbers. At Horicon, the data collected is used to adjust stocking recommendations and update recommendations concerning carp control.

Scott Yess, La Crosse FRO

-USFWS

La Crosse Fishery Resources Office conducted fishery surveys at the Fox River and Horicon National Wildlife Refuges (NWR). This was the first time a survey was conducted at Fox River NWR which will help managers develop a fishery management plan.

Rydell National Wildlife Refuge Walleye Production and Stocking Totals

Dave Wedan from the La Crosse Fishery Resources Office (FRO) and Jay Ciucci of the Rydell National Wildlife Refuge (NWR) set fyke nets on Clifford Lake signaling the start of the 2004 walleye harvest and stocking effort. Each spring, newly hatched walleye fry are stocked in Clifford Lake, a shallow lake on the NWR that freezes over in winter and kills all the fish. Walleye are netted in the fall, transported by Genoa National Fish Hatchery (NFH), and stocked in tribal and Federal waters. After a record harvest in 2003, the number of walleyes netted and stocked was down this year; however, the 10,500 walleye were still above the long term average. NFH staff, Dan Kumlin and Jeff Lockington, transported the healthy 6 to 10 inch walleyes to the Red Lake Indian Reservation and to the DeSoto NWR in Western Iowa. Thanks to Dave Bennett, Rydell Project Leader, for his help and support in making this walleye production and stocking program a success!

Dave Wedan, La Crosse FRO

-USFWS

Fingerling walleye are being removed from Clifford Lake, a small and shallow winter kill lake on Rydell National Wildlife Refuge in Northwest Minnesota. Each year, walleye fry are stocked into the lake to produce fingerlings to fill high priority requests.

Second Annual Survey of Lower Swan Lake on the Two Rivers National Wildlife Refuge

Swan Lake, located on Two Rivers National Wildlife Refuge (NWR), is a large backwater lake of the Illinois River. The lake is the site of a recent Upper Mississippi River Environmental Management Program, Habitat Rehabilitation Project. The lake was subdivided into three units to control water level independent of the Illinois River. Carterville Fishery Resources Office (FRO) and managers from Two Rivers NWR began a long-term program to monitor the fishery at Swan Lake beginning with sampling in 2003 and included a survey in October. Sampling included trammel nets, fyke nets, and electrofishing. This survey will provide data on the long-term trends of the fish community in Lower Swan Lake. Preliminary analyses of data from the 2004 survey indicate that populations of sport fish, especially black crappie, are beginning to rebuild since the lake was drained in 2002.

Nate Caswell, Carterville FRO

-USFWS

Biologist Colby Wrasse sets a fyke net in Swan Lake on the Two Rivers National Wildlife Refuge. The Carterville Fishery Resources Office is sampling the lake to provide data on long term trends of the fish community.

Aquatic Invasive Species

Young-of-year Asian carp captured in the Missouri River

Small, young-of-year silver carp were collected from a scour hole at Overton Bottoms by the Columbia Fishery Resources Office (FRO) in October. This scour hole is connected to the Missouri River during high water events. The invasive silver carp measured 1.1 to 1.5 inches making them much too small to be part of the spring spawning season. According to aquaculture literature, silver carp of this size should be 14-30 days old. The nearby U.S. Geological Survey water gauging station documented a near flood stage high water event that peaked 34 days before the capture of these fish. Since many large river fish use rising water levels as spawning cues, collection of these juvenile silver carp may indicate the ability of this species to spawn multiple times during the year when conditions are favorable. Last July, silver carp up to 4.1 inches were captured from the same scour. The fish captured in July were progeny of the spring spawn which most likely occurred in April or May.
Andy Starostka, Columbia FRO

-USFWS

These small, invasive silver carp were collected from the Missouri River. The small size of these specimens in relation to the collection date may indicate that silver carp will spawn several times per year when conditions are favorable.

Asian Carp Management and Control Plan Update – Goals Revised

A Management and Control Plan for "Asian carp" (i.e., bighead carp, silver carp, grass carp, and black carp) is being developed by multiple resource management partners and stakeholders to integrate prevention and control activities across the nation to limit the further distribution and negative impacts of these four aquatic invasive species. Greg Conover, Carterville Fishery Resources Office (FRO), recently distributed notes from the Asian Carp Work Group's May meeting. Actions were taken on a number of items identified during the meeting including revision of the goals and objectives for the Management and Control Plan. The revised goals and objectives have been distributed to the Work Group members for further review and development. Considerable discussion has resulted to ensure stakeholder buy-in and participation in the implementation of the plan. Stakeholders are engaged in the fundamental discussions to develop the goals and objectives for the plan. The plan is expected to come together relatively quick once the goals and objectives are finalized.
Greg Conover, Carterville FRO

Federal Partners monitor the St. Croix River

Divers from both the National Park Service and the Fish and Wildlife Service searched for zebra mussels in the St. Croix River. The team started approximately ten miles north of St. Croix Falls and worked their way south. The dive team changed their monitoring location in an effort to explore the possibility of a range expansion by invasive zebra mussels. Fortunately, no zebra mussels were found and the confirmed range of their population remains near Stillwater, Minnesota. Two additional monitoring dives were conducted during the summer. Data from all three dives will be analyzed along with other data to develop recommendations for the St. Croix Zebra Mussel Task Force.

Monitoring of invasive zebra mussel populations on the St. Croix River is an important aspect for the recovery of two Federally endangered mussel species and several state listed species. The St.Croix is one of the Nation's premier mussel rivers. Monitoring zebra mussel populations provides resource managers the information they need to make sound management decisions.
Scott Yess, La Crosse FRO

-USFWS

Divers from the National Park Service and the Fish and Wildlife Service "took the plunge" into the St. Croix River to look for any signs of invasive zebra mussels.

Ruffe Range expands 69 Miles in Lake Superior

A fall aquatic invasive species survey conducted by the Ashland Fishery Resources Office (FRO) detected the presence of invasive Eurasian ruffe in Marquette harbor, Michigan, Lake Superior. A 1.6 inch young-of-the-year (YOY) ruffe was captured in a bottom trawl from a heavy boat slip adjacent to the power facility in Lower Marquette harbor. This slip is one of five index transects in Marquette harbor established to monitor for presence and abundance of Eurasian ruffe and other aquatic invasive species. The discovery is 69 miles east of the Sturgeon River Sloughs, Keweenaw Waterway, and the previous detected eastern boundary of the ruffe range along the south shore of Lake Superior. The ruffe, a member of the perch family from Europe and Asia, spread rapidly eastward from the Duluth-Superior harbor reaching Ontonagon, Michigan in 1994. Due to the Ruffe Control Plan and unfavorable habitat, ruffe expansion stalled in Ontonagon, until it was detected in the Keweenaw Waterway and Lake Michigan in 2002. Ruffe have a negative impact on native yellow perch. A large catch (110) of YOY ruffe from the Ontonagon River Estuary indicates a new strong year class there.

Gary Czypinski, Ashland FRO

Asian Carp Escapes Biologist's Nets

A field crew from Columbia Fishery Resources Office (FRO) assisted the U.S. Geological Survey (USGS) in the attempted capture of a telemetry and archival tagged invasive silver carp in the Lamine River, a medium size tributary of the Missouri River. Gill and trammel nets were used to confine the tagged carp and an electrofishing boat was used to drive the fish into the nets. The tagged fish avoided capture by passing through or around several nets. USGS personnel had attempted to capture this particular fish several times before and it had shown this uncanny ability to avoid capture each time. One hundred to 200 other invasive Asian carp (bighead and silver) were captured in the process and samples collected from many of them and will be used in an ongoing aging study at the Columbia FRO. Recapture of a specific fish has been found to be difficult even when the exact location is known while others of the same species are captured in the same area. We do not give these "simple" animals enough credit to detect and avoid sampling gears which they have encountered in the past. Aquatic invasive species compete with native species for food and habitat resources.

Andy Starostka, Columbia FRO

-USFWS

This invasive Asian carp was captured during a fishery survey in the Lamine River, a tributary to the Missouri River.

Survey Conducted to assess Goby Predation on Lake Trout

In October, the Alpena Fishery Resources Office (FRO) conducted a survey to assess predation of the invasive round goby on lake trout eggs on a historically important lake trout spawning reef in Thunder Bay, Lake Huron. Round goby are an aquatic invasive species that first invaded the Great Lakes in 1990 from the discharged ballast water of an ocean-going vessel. Native to Eurasia, the goby is an aggressive fish species that preys on fish eggs and fry and competes with native species for food and habitat. The goby may threaten restoration efforts currently underway for lake trout in the Great Lakes. Goby have been found in near and offshore areas which contain reefs used by lake trout for spawning.

Alpena FRO initiated the study in 2002 to assess goby predation on lake trout eggs from a near shore reef found in Thunder Bay and known to contain round goby. Set lines and trap lines have been used to collect goby. Over 130 goby were captured in October. Their diet will be examined to detect and quantify predation on lake trout eggs. This study was funded by the U.S. Environmental Protection Agency Great Lakes National Program Office.

Anjanette Bowen, Alpena FRO

-USFWS photo by Anjanette Bowen

Alpena Fishery Resources Office Biologist Aaron Woldt holds up an invasive round goby captured by a setline on a nearshore reef in Lake Huron used by spawning lake trout. Dietary analysis will be conducted on the goby to determine if they are feeding on lake trout eggs.

Public Use

Scouts get Banded at Seney National Wildlife Refuge

Fish and Wildlife Service personnel presented "Get Banded" to over 100 Girl and Boy Scouts as part of Scout Activity Day 2004 at Seney National Wildlife Refuge in Michigan. Through hands-on activities, scouts learned how the banding program provides important information about birds. This information is useful in both research and management projects and the identification of birds makes possible studies of dispersal and migration, behavior and social structure, life-span and survival rate, reproductive success and population growth. To demonstrate some of the data collected during typical banding activities, measurements were taken of each scout that included arm and leg length, total height, head circumference, and weight. They were then fitted with a plastic wrist band with their own unique band number. Fish and Wildlife Service staff promotes educational outreach activities to scouts and the public.
John Weisser, Marquette Biological Station

GLFC

Fish and Wildlfe Service personnel assisted with a hands-on activity to teach scouts about bird banding. Staff from the Marquette Biological Station participated in the event held at the Seney National Wildlife Refuge.

Coasters Go Local!

Iron River National Fish Hatchery (NFH) stocked two local lakes with coaster brook trout fingerlings in October. A total of 6,300 excess Siskiwit Bay strain production brook trout were stocked into Nymphia and Overby lakes in Northern Wisconsin. These fish were stocked in partnership with the Wisconsin Department of Natural Resources to add to their recreational stocking program. The remote location of the lakes required some pretty creative leg work from the hatchery staff. Dale Bast and Nick Grueneis from Iron River, with the help of Scott Sanders from the Marquette Biological Station, carried coolers of fingerlings over the hills and through the woods!
Angela Baran, Iron River NFH

Walleye Management in Lake Greenwood – Crane Naval Weapons Support Center

Carterville Fishery Resources Office (FRO), in cooperation with the Indiana Department of Natural Resources and Crane Naval Weapons Support Center, has worked to create a walleye fishery at Lake Greenwood. Located on Crane Naval Weapons Support Center, Lake Greenwood has received walleye fingerlings from the Genoa National Fish Hatchery since 2000, including 800, 5.5-in. walleye this fall. In addition to stockings, Carterville FRO completed a fall walleye survey at Lake Greenwood using boat electrofishing. Crane Naval Weapons Support Center and a volunteer assisted with the two night survey. The data collected will be used to assess the walleye population and the effectiveness of walleye stocking at Lake Greenwood aiding lake managers in determining future stocking needs and setting fishing regulations.
Nate Caswell, Carterville FRO

-USFWS

Nate Caswell removes a scale sample from a walleye captured in Lake Greenwood on the Crane Naval Weapons Support Center. Data from this night electrofishing survey will help determine future management needs.

Annual Fall Sport Fish Survey on Crab Orchard Lake

Crab Orchard Lake on the Crab Orchard National Wildlife Refuge (NWR) is well known for good panfish and bass fishing. Maintenance of the quality fishery requires an annual fall fish survey. Two crews from the Illinois Department of Natural Resources and one crew from the Carterville Fishery Resources Office (FRO) set out to sample the lake in October. Each crew was responsible for electrofishing four sites for 30 minutes each. Based on the four sites sampled by Carterville FRO, there are several places to catch good sized

largemouth bass, hybrid striped bass, and lots of sunfish. Projects such as this help to reinforce the Fish and Wildlife Service's partnerships with other natural resource agencies and support the Fish and Wildlife Service's commitment to provide quality recreational fishing opportunities.
Nate Caswell, Carterville FRO

-USFWS

Biologist Nate Caswell operates an electrofishing system during a fishery survey on Crab Orchard Lake which is located in Southern Illinois on Crab Orchard National Wildlife Refuge.

Fish Survey Field Work completed at the Port Louisa National Wildlife Refuge

Andy Starostka from the Columbia Fishery Resources Office (FRO) completed a fisheries survey on the Keithsburg Unit of the Port Louisa National Wildlife Refuge (NWR). The purpose of the survey was to assess recreational fish populations and monitor for invasive Asian carp with assistance from refuge personnel. Sampling consisted of 10 trap net-nights, 2 gill net-nights, and over one hour of electrofishing effort. Low water levels limited sampling effort to the south end of the unit near the boat ramp. Preliminary results indicate good populations of both recreational fish and native backwater species. Largemouth bass up to four pounds, crappie approaching two pounds, and large northern pike were captured during sampling. Several largemouth buffalo and bowfin were also captured. No invasive Asian carp (bighead, grass or silver) were observed during the survey. The unit was last sampled in 1996. Survey work on the Port Louisa NWR enables the Columbia FRO to meet the Fish and Wildlife Service's Fishery Program goal of increasing recreational fishing opportunities on National Wildlife Refuges.
Andy Starostka, Columbia FRO

-USFWS

Tim Julison of the Port Louisa National Wildlife Refuge assisted the Columbia Fishery Resources Office with fish sampling to assess recreational fish populations and monitor for invasive Asian carp on the Refuge.

Largemouth Bass harvested and stocked into Crab Orchard Lake

Crab Orchard Lake is a 7,000 acre impoundment on Crab Orchard National Wildlife Refuge (NWR). It is a popular destination for anglers, host to several fishing tournaments each year, and important to the local economy. The Illinois Department of Natural Resources (DNR), Carterville Fishery Resources Office (FRO), and Crab Orchard NWR cooperatively manage this recreational fishery. The lake is a popular spot for largemouth bass fishing and supplemental stocking is important to maintaining the quality of bass fishing.

A pond, located on Crab Orchard NWR, is used by the Illinois DNR to grow bass for stocking. Every fall, the Illinois DNR, Carterville FRO, and numerous volunteers drain the pond, collect the bass fingerlings, and stock them in Crab Orchard Lake. This year, Nate Caswell, Greg Conover, and Rob Simmonds helped to harvest and stock approximately 12,500 largemouth bass fingerlings into Crab Orchard Lake, making for a successful year in the rearing pond and promising good bass fishing in the coming years.
Nate Caswell, Carterville FRO

Cooperation with Native Americans

Fall Walleye Surveys with the Great Lakes Indian Fish & Wildlife Commission

Frank Stone from the Ashland Fishery Resources Office (FRO) finished an eight-week project assisting the Great Lakes Indian Fish and Wildlife Commission in collecting walleye using a boat electrofishing system. The objectives of these surveys are to estimate relative abundance of young-of-the-year walleye in several lakes of northern Wisconsin and Michigan. The data from the surveys will be used in conjunction with spring population estimates, to set walleye safe harvest levels for the 2005 spring spearing season. A total of 31 lakes were surveyed during this period.
Frank Stone, Ashland FRO

-USFWS

Great Lakes Indian Fish and Wildlife Commission staff prepare to collect walleye using an electrofishing system. Ashland Fishery Resources Office assisted in these surveys to estimate the relative abundance of young-of-the-year walleye in several lakes in northern Wisconsin and Michigan.

White Earth Department of Natural Resources Fishery Survey

Fishery surveys are always exciting and the survey conducted on Tea Cracker Lake was no exception. Tea Cracker is a small lake which borders the White Earth Reservation and Tamarac National Wildlife Refuge, two management areas which the La Crosse Fishery Resources Office (FRO) provides assistance. Randy Zortman, White Earth Department of Natural Resources (DNR), requested assistance from Scott Yess, La Crosse FRO, on this fishery survey. Randy and his crew have a very active walleye management program on the Reservation and Tea Cracker is one of the lakes currently being stocked with walleye. Tea Cracker has had some tremendous years providing anglers with many hours of exceptional fishing; however, this lake winterkilled in 2003 so it is currently on the rebound. The survey indicated low to moderate numbers of one and two year old fish so it will take a couple more years to provide good fishing. It is worth putting the effort in on Tea Cracker, Zortman explains, because it will have several good years before a major winterkill occurs and they have to start over. This fishery survey data will be used to make management recommendations regarding the walleye fishery in Tea Cracker Lake.

Walleye fingerlings are normally stocked in Tea Cracker from grow out ponds that Randy and his crew harvest each fall. This year the lake received hundreds of walleye fingerlings which hopefully will provide a recreational fishery in two years. The White Earth DNR manages over 40 lakes on the Reservation for walleye which are some of the best walleye producers in Northwest Minnesota.
Scott Yess, La Crosse FRO

Coasters on the Border

Biologist Steve Redman from the Iron River National Fish Hatchery (NFH) stocked coaster brook trout with assistance from personnel of the Grand Portage Tribal Resources Department. The Pigeon River, which is a tributary to Lake Superior on the United States/Canada border, was stocked with 20,000, 5 inch coaster brook trout reared at the Genoa NFH. All fish were marked with oxytetracycline dye in addition to a fin clip at the hatchery before stocking. This will allow biologists to monitor the status of the coasters in these habitats. This multiple year stocking event, which is coordinated between the Grand Portage Indian Community and the Fish and Wildlife Service, was established to fulfill the rehabilitation plan for Lake Superior coaster brook trout. The combined effort has led to continued monitoring of coaster brook trout status, distribution, movement, and the abundance of re-introduced fish. In addition to these accomplishments, the Tribe has also acquired additional land, improved stream habitats, and removed barriers that would impact coaster rehabilitation.
Steve Redman, Iron River NFH

Leadership in Science and Technology

Lake Whitefish Tagging Station

Biologist Scott Koproski built tagging stations for a Lake Huron lake whitefish distribution study that starts in November. This study is funded through the Great Lakes Fish and Wildlife Restoration Act, and there are seven partner agencies tagging whitefish at eight locations throughout the basin. The objective of the study is to identify the distribution of different stocks of lake whitefish in Lake Huron. At each location 1,500-3,000 lake whitefish will be floy tagged, measured, and scale sampled to obtain age estimates prior to release. The Alpena Fishery Resources Office (FRO) is responsible for tagging 1,500 lake whitefish in the Thunder Bay area of Lake Huron.

Koproski built two identical tagging stations to expedite the tagging process. Each station has a built-in measuring board, a fish staging area, a smooth surface for data recorders to work, and a dry compartment for scale envelopes. Each tagging station is secured to a 100 gallon tank where fish will be held until they are processed. The stations also have an oxygen tank to provide fresh oxygen to fish held in the tank to minimize stress. In addition to the tagging stations, Koproski built a live-trap which will be secured to the side of the vessel while on the water. The live-trap will be used to obtain a measure of tag retention and post handling survival for a group of randomly selected tagged fish.

This is the first year of a three year, multi-agency lake whitefish distribution project. This study will provide managers with a better understanding of lake whitefish stock delineation and distribution within the basin. This project is an example of the Alpena FRO's commitment to Fisheries Vision Priorities.

Scott Koproski, Alpena FRO

-USFWS photo by Aaron Woldt

Lake whitefish are the target of a lake-wide, Lake Huron distribution study that begins in November, 2004. Alpena Fishery Resources Office prepared equipment for the study including tagging stations.

Independent Science Review of the Pallid Sturgeon Monitoring Program

Project Leader Tracy Hill and Biologist Wyatt Doyle participated in a scientific review of the Federally endangered pallid sturgeon monitoring project. The Army Corps of Engineers contracted with Sustainable Ecosystems Institute (SEI) to conduct the independent science review of the pallid sturgeon population assessment and monitoring program. SEI conducts their reviews in an open forum unlike the anonymous review process that is typical of the peer review process. The review consisted of a scientific panel composed of the following individuals: Dr. Michael Bozek from the University of Wisconsin, Dr. Deborah Brosnan with SEI, Dr. Henriette Jager with Oak Ridge National Laboratory, Dr. Jim Quinn with University of California at Davis and Dr. David Secor with the Chesapeake Biological Laboratory. The scientific review was attended by 23 individuals representing the following organizations: U.S. Army Corps of Engineers, Fish and Wildlife Service, Nebraska Game and Parks Commission, Missouri Department of Conservation, South Dakota Department of Game, Fish and Parks, and SEI. This is an example of inter-regional collaboration to improve information standardization and optimize species restoration efforts in the Great Lakes/Big Rivers Region. This effort assists Columbia Fishery Resources Office (FRO) in fulfilling the Fisheries Program's Vision for the Future priorities for "Leadership in Science and Technology" and "Aquatic Species Conservation and Management".

Tracy Hill, Columbia FRO

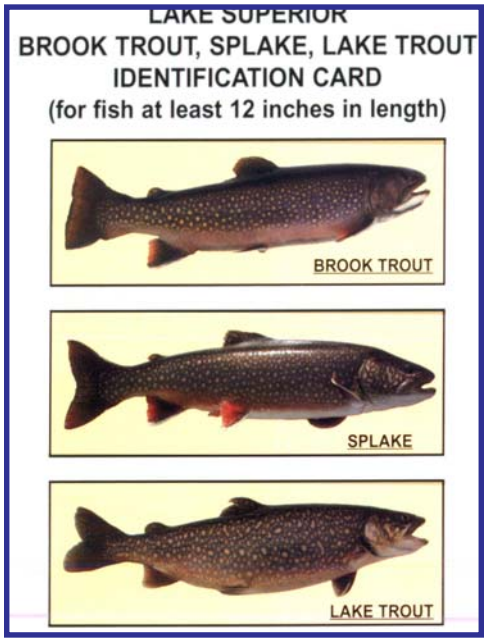
Splake/Brook Trout Backcrosses found in Lake Superior

Genetic analysis of tissue samples taken from splake (a fertile hybrid of brook trout and lake trout) captured in Lake Superior has revealed the presence of individual fish that are actually the product of splake matings with brook trout. A total of 16 "splake", captured along the shoreline at Pictured Rocks National Lakeshore near Munising, Michigan, were analyzed. Five were found to be backcrosses. Physical examination of the specimens also found pyloric caeca counts that were intermediate between splake and brook trout. At this time it is unknown whether the backcrosses were the result of matings occurring in the wild or were the result of a brood stock misidentification. The discovery heightens concerns that the stocking of splake in Lake Superior may pose a threat to the genetic integrity of native brook trout and lake trout stocks.

The U.S. Geological Survey (USGS), Michigan Department of

Natural Resources, and Pictured Rocks National Lakeshore partnered with Ashland Fishery Resources Office (FRO) in the study. Results were presented by USGS Geneticist Wendy Lee Stott at the American Fisheries Society meeting held in Madison, Wisconsin last August and will be published soon. The study results suggests that further exploration of the backcrossing phenomena in other areas of Lake Superior is needed to define the source and scope of the problem, as well as the potential for damage to native stocks.

Lee Newman, Ashland FRO



Brook trout and lake trout are native to Lake Superior. Splake is a fertile hybrid of the two. There is a concern that stocking splake in Lake Superior may pose a threat to the genetic integrity of brook trout and lake trout.

Mississippi Interstate Cooperative Resource Association Partnership funds Database Programming

The Executive Board of the Mississippi Interstate Cooperative Resource Association (MICRA) agreed to provide the Columbia Fishery Resources Office (FRO) with an additional $5,000 to support the national paddlefish stock assessment project. Assistant Project Leader Joanne Grady is working with Debin Benish of the Delta Systems Group, Inc. to create Access programming language to establish recapture histories for paddlefish tagged throughout the Mississippi River Basin. The stock assessment database is the largest inland fishery coded wire tagging database in the world and is jointly managed by the Columbia and Carterville FRO's.

Linking fish recaptures is significantly more difficult than most standard mark-recapture studies because recaptured fish are assigned a new tag number with every capture and tags are retrieved from sport and commercial captures in addition to biologist sampling. The finished product will allow large river biologists to examine paddlefish movements throughout the Mississippi River Basin. This project will allow better analysis of the world's largest inland fishery coded wire tagging database. Modifications to this database will improve the information sharing process between agencies and the general public who may encounter tagged paddlefish. Improved data sharing will lead to better understanding of the population trends and movement patterns of paddlefish in the Mississippi River Basin.

Joanne Grady, Columbia FRO

Coded Wire Tag Extraction

Biologist Adam Kowalski extracts and reads coded-wire-tags (CWT's) from lake trout. CWT's are microscopic metal tags placed in the snouts of juvenile lake trout at the hatchery. Lake trout were collected during the spring fishery independent lake whitefish survey conducted by the Alpena Fishery Resources Office (FRO). Kowalski also extracted and read CWT's from sport-fishery caught lake trout collected by Michigan Department of Natural Resources (DNR) creel clerks in Lake Huron.

CWT's are removed and read under a microscope. Each tag's unique number is recorded. The tag number, when compared to stocking records, yields information such as stocking location, stocking date, fish age, fish strain, and hatchery of origin. In total, Kowalski removed and read over 100 tags in October. Additional lake trout will be received this fall from Bay Mills Indian Community, Chippewa Ottawa Resource Authority, Michigan DNR, and Alpena FRO.

Data collected from lake trout CWT's are used to determine harvest limits, stocking locations, movement patterns, and post stocking survival rates of various hatchery practices. These outcomes are consistent with the goal of building and maintaining self-sustaining populations of native fish species while providing recreational fishing opportunities and meeting the needs of tribal communities.

Adam Kowalski, Alpena FRO

Aquatic Habitat Conservation and Management

New Low Water Crossing benefits Niangua Darter

The first open span, low water crossing to benefit the Threatened Niangua darter has been completed. The structure, on Lakota Road, spans Thomas Creek in Dallas County, Missouri. The old structure was a series of box culverts placed on top of at least two previous structures. The stream disappeared into a large gravel deposit above the old structure and reappeared in a plunge pool below the downstream end of the structure. Niangua darter could not travel through the old structure leading to a fragmentation of the population. Niangua darters had not been documented upstream of this low-water crossing, although stream conditions would support the fish. Free passage past this structure should open two miles of stream to Niangua darter habitation.

The new structure consists of 16 pre-cast concrete slabs. There is one pier located mid-stream which is tied into the stream bedrock. The structure is designed to pass water and fish at all stream stages. This project will serve as a model example of low water crossing design in Osage Basin streams. This new bridge was made possible through a partnership of the Columbia Fishery Resources Office (FRO), Missouri Department of Conservation, Dallas County Commission, Missouri Natural Heritage Foundation, Federal Emergency Management Agency, Missouri State Emergency Management Agency, Great Rivers Engineering, and U.S. Army Corps of Engineers.

Joanne Grady, Columbia FRO

The first open span, low water crossing to benefit the threatened Niangua darter has been completed on Lokota Road that spans Thomas Creek in Dallas County, Missouri. The former structure (top) provided zero passage that led to a fragmentation of the population while the newly completed crossing (bottom) allows Niangua darters and other aquatic species to pass freely.

-USFWS photos

McCann and Palet Wetland Restoration Projects Completed

Construction has finished on the McCann and Palet wetland restoration projects. These Partners for Fish and Wildlife projects in the Lake Superior watershed restored one and three wetland acres, respectively. Upland nesting cover around the projects was also enhanced, totaling 12 acres. These wildlife habitat projects will benefit a host of species including American black ducks and wood ducks.

After the design was completed on the projects, the contracts were awarded to Ritola Incorporated of Mason, Wisconsin. Wetland Development Agreements were signed to protect the restored areas for a period of 10 years. Other partners contributing to the success of the projects are the Ashland Bayfield Douglas and Iron County Land Conservation Department and Ducks Unlimited.

Ted Koehler, Ashland FRO

McCann (top) and Palet (bottom) wetland restoration projects restored one and three wetland acres respectively in the Lake Superior watershed. These Partners for Fish and Wildlife projects also enhanced 12 acres of upland nesting cover.

-USFWS photos

Low Head Dam Removal in Petosky, Michigan

A four foot by 20 foot low head dam on Tannery Creek in Emmet County was removed. The project is located in Petoskey, Michigan on the property of the Petoskey Bay View Country Club. The dam removal project was funded by the Fish and Wildlife Service's Fish Passage and Coastal Programs and improved habitat access for native brook trout.

Tannery Creek is a cold water, high gradient, and tributary stream of Lake Michigan with a resident brook trout population. Removal of the dam opened approximately three miles for brook trout spawning and rearing habitat. Prior to removal, a barrier to invasive sea lamprey passage was added downstream of the dam. This barrier is a stop log structure that will be in place during the sea lamprey spawning season. This was required to prevent sea lamprey entering the system from Lake Michigan.

The many partners and interagency cooperation was integral in completing this project. Partners involved in the project include the Michigan Department of Natural Resources, Tip of the Mitt Watershed Council, Petoskey Bay View Country Club, Michigan Department of Environmental Quality, East Lansing Field Office, Marquette Biological Station, and Alpena Fishery Resources Office (FRO). This is an example of collaboration between Federal, state, and local governments and watershed groups to enhance aquatic habitat which will benefit fish and wildlife resources including native brook trout.
Susan Wells, Alpena FRO

Alpena Fishery Resources Office partnered in the removal of a low head dam from Tannery Creek in Emmet County, Michigan. The removal opened three miles of brook trout spawning and rearing habitat. The project was supported by many partners along with the Fish and Wildlife Service's Fish Passage and Coastal Programs.

-USFWS photos by Susan Wells

Salmon Trout River Restoration Projects

The Environmental Protection Agency Great Lakes National Program Office (GLNPO), funded habitat restoration projects on Michigan's Salmon Trout River in 2001. These projects have been completed! Ashland Fishery Resources Office (FRO) secured GLNPO grant funding in the amount of $89,000. The Central Lake Superior Watershed Partnership (the lead partner) removed and/or replaced 16 undersized and/or perched culverts, installed five clear span bridges, and installed over 40 Best Management Practices structures to control run-off and sedimentation at prioritized stream crossings throughout the watershed. In addition, a single large sediment/sand trap was installed on the main branch of the Salmon Trout River.

The project has already produced a visible and significant reduction in sediment deposition into the stream and restored fish passage throughout the upper stream reaches. Native brook trout populations will be the primary beneficiaries of the project in the upper stream and the anadromous native coaster brook trout in the lower stream.
Lee Newman, Ashland FRO

Before

Native brook trout populations will benefit from this project on Michigan's Salmon Trout River. Perched culverts under an eroded crossing were replaced with a clear span bridge providing uninhibited movement of native aquatic species.

After

-USFWS photos

Polander Habitat Project is Fish Friendly

The La Crosse Fishery Resources Office (FRO) staff assisted by the Upper Mississippi Wildlife and Fish Refuge (Winona District) staff completed this year's third fishery survey on Polander Lake (Pool 5A). The study is designed to determine fish usage in Polander Lake's new island complex. These islands were constructed as part of a Habitat Rehabilitation and Enhancement Project (HREP) on the Upper Mississippi River. Several HREP's have islands as a feature built into the project. The islands help break up wind fetch which reduces suspended sediments. They also create slack water habitat which promotes vegetation growth and provides food and cover for both fish and wildlife. Nesting habitat for waterfowl and turtles are also benefits of island construction.

Fishery monitoring was conducted in September. The information will be compared to the spring and summer data which will help determine seasonal use. Both electrofishing and trap netting were conducted, and fish collected were weighed, measured, and released. This project is a great follow up to the paddlefish work which was conducted in Polander Lake two years ago. The information obtained from this project will help resource managers make critical decisions on habitat projects in large river systems.

Scott Yess, La Crosse FRO

-USFWS

A trap net is lifted out of Polander Lake. The La Crosse Fishery Resources Office and Upper Mississippi Wildlife and Fish Refuge staff completed this survey as part of a study to determine fish usage at the lake's new island complex.

Michigan Stream Team held First Workshop

The Michigan Stream Team held the first of a series of workshops designed to set a protocol for gathering and calculating consistent measurements of stream habitat and morphology. The goal of the team is to develop regional curves for the State of Michigan. Regional curves are relationships of bank full cross-section dimensions versus drainage areas for the physiographic provinces within Michigan. These calculations should be used to design all stream restoration projects. The first workshop was held in October. Team members gathered an extensive amount of data at a "stable" reference reach of Augusta Creek (Kalamazoo River Watershed) that had a U.S. Geological Survey gauging station located within the reach. This exercise will be repeated at 25 sites identified by the Michigan Department of Environmental Quality (DEQ) throughout the state as stable reference reaches. Analysis of the data collected at the reference reaches should allow the Stream Team to determine regional curves for the State of Michigan.

The Stream Team is led by Ralph Reznick of the Michigan DEQ, and Chris Freiburger of the Michigan Department of Natural Resources (DNR). Additional representatives from both the DNR and DEQ serve on the Stream Team, as do representatives from the Michigan Department of Transportation, U.S. Geological Survey, U.S. Forest Service, and Heather Enterline from the Alpena Fishery Resources Office (FRO).

Work with the Michigan Stream Team addresses the "Aquatic Habitat Conservation and Management" priority of the Fisheries Program Vision for the Future. Michigan Stream Team work will benefit all of the aquatic resources within Michigan by providing the correct data for managers to utilize when designing aquatic restoration projects.

Heather Enterline, Alpena FRO

Service partners with States on Missouri River Mitigation Program

Columbia Fishery Resources Office (FRO) is a member of the U.S. Army Corps of Engineers (Corps) Missouri River Agency Coordination Team and a member of the monitoring and evaluation subcommittee. Over the past year, the FRO and Columbia Ecological Services office have worked collaboratively with the Corps and state fish and game agencies to establish a monitoring and evaluation program. Under the Missouri River Fish and Wildlife Mitigation Project (Water Resources Development Act of 1986 and 1999) the total amount of land authorized for mitigation is 166,750 acres. A variety of aquatic and terrestrial habitats acquired

by the Corps have been restored and developed in the Missouri River and its floodplain to enhance habitats for fish and wildlife. Monitoring and evaluation of these sites is essential to the overall success of the program. Monitoring will enable the Agency Coordination Team to determine whether the mitigation sites are performing as expected. It will allow river managers to recommend improvements to existing sites and make informed decisions on the development and design of future sites.

Proposals to evaluate fish communities in restored and constructed chutes and their associated backwater habitats were submitted by the Iowa Department of Natural Resources, Nebraska Game and Parks Commission, Missouri Department of Conservation, and Columbia FRO this fall. Discussions at the October technical committee meeting focused on sampling sites and protocols to ensure that field work conducted by participating partners will be uniform and reporting will be cohesive. Fish community monitoring and evaluation of mitigation sites is anticipated to begin in the spring of 2005 and will be funded by the Corps. The FRO continues to partner with state agencies to conserve and increase native fish populations in the Missouri River and to identify and take appropriate actions that will help achieve desired resource goals and outcomes.

Louise Mauldin, Columbia FRO

-USFWS

This is an aerial view of the Lower Hamburg Bend chute on the Missouri River. It was constructed by the U.S. Army Corps of Engineers as part of the Missouri River Mitigation Program.

Culvert Replacement on Brehmer Creek

The Green Bay Fishery Resources Office (FRO) assisted the Wisconsin Department of Natural Resources with two culvert replacements on Brehmer Creek, located in Oconto County, Wisconsin. Brehmer Creek supports natural reproduction of trout and is characterized as a "blue ribbon" (class 1) brook trout stream. Most of the stream is located in a county forest so negative impacts from surrounding land use are minimal. The greatest impacts to the stream were the existing culverts. Two locations had steep shoulder slopes at the pipe ends with chronic slope failure contributing sediment to the stream and causing routine maintenance problems. In addition, both culverts were perched over 10 inches, prohibiting fish passage. Culvert replacements were six inches wider and several feet longer. The larger culverts allowed for proper depth of placement into the streambed, while the additional length enabled a flatter, more stable slope to be used at the pipe ends. Partial funding for this project was provided by the Partners for Fish and Wildlife program.

Stewart Cogswell, Green Bay FRO

"Tagging Week" at Two Rivers National Wildlife Refuge

Carterville Fishery Resources Office (FRO) assisted Southern Illinois University – Carbondale graduate students with their "tagging week" activities at Two Rivers National Wildlife Refuge (NWR). Two students, Doug Schultz and Kelly DeGrandchamp, are currently conducting studies on the movements of largemouth bass, catfish, common carp, bighead carp, and silver carp in Swan Lake and the Illinois River at the refuge in response to a habitat rehabilitation project. Carterville staff, Nate Caswell and Rob Simmonds, spent two days electrofishing in Swan Lake and the Illinois River to capture the remaining catfish and silver carp needed from the Illinois River and several catfish and carp needed from Swan Lake to complete the tagging project.

Nate Caswell, Carterville FRO

-USFWS

This invasive silver carp, one of the Asian carp species, was captured during a fishery assessment of a habitat rehabilitation project at Two Rivers National Wildlife Refuge. Unfortunately, captures of invasive fish are becoming a normal occurance during fishery surveys.

Workforce Management

Iron River National Fish Hatchery gets by with a Little Help

This fall's spawning season looked bleak for the sparse staff at Iron River National Fish Hatchery (NFH). A cry for help was sent throughout the Fish and Wildlife Service as well as to local sportsmen's groups. The volunteer response was surprising as employees from near and far signed up for one week commitments. Fish and Wildlife Service volunteers were able to pick up on the procedures the first day and were experts by the time they left! The staff at Iron River would like to thank: Neal Young (Big Muddy National Wildlife Refuge 'NWR'), Donna Zanger (Mark Twain NWR Complex), Linda Benson (Minneapolis/St. Paul Airport Wildlife Inspector), Colby Wrasse (Carterville Fishery Resources Office), John and Denise Johnston and Wayne Talo (Jordan River NFH), Nick Starzl (Genoa NFH), Rick Nelson (La Crosse Fish Health Center), Mary Soler (Litchfield Wetland Management District) and Scott Sanders (Marquette Biological Station). We were also fortunate to receive help from Norman Nicholson, Don Cornue, and Ron Gaare from Trout Unlimited and Sean and Patrick Charette from Red Cliff Tribal Hatchery.
Angela Baran, Iron River NFH

-USFWS

In order to get through the busy spawning season, Iron River National Fish Hatchery recruited volunteers from numerous Fish and Wildlife Service offices, Trout Unlimited, and Red Cliff Tribal Hatchery.

Region 6 Hydrologist visits Northern, Lower Michigan

To better identify the need for a hydrologist in Region 3, Meg Estep, Region 6 Hydrologist, participated in a month long detail to view the type of habitat work being conducted here. Alpena Fishery Resources Office (FRO) biologists Susan Wells and Heather Enterline toured the Thunder Bay River watershed with Estep, Refuge Facilities Manager Rob Miller, and Regional Pilot Brian Lubinski. The group viewed and discussed a variety of watershed restoration issues within the watershed. Three fish passage and one large stream bank erosion project site were visited. Strategies for the stream bank erosion site were discussed extensively and several ideas were suggested by Estep and Miller. A written report will be provided by Estep at the end of her detail with her suggestions for each of the facilities and projects she visited including the Alpena FRO. Ideas on how to address prioritization, from a hydrological view, were discussed for the fish passage projects. A goal of the Alpena FRO fish passage program is to identify projects that offer the greatest resource benefit with a limited amount of funding. Being able to utilize the knowledge and expertise of a hydrologist would assist all stations involved in watershed restoration programs.

This is an example of inter-regional collaboration to improve information sharing and optimize habitat restoration efforts in Region 3. This effort assists the Alpena FRO in fulfilling the Fishery Program's Vision for the Future priorities for "Workforce Management" and "Aquatic Habitat Conservation and Management."
Susan Wells, Alpena FRO

Fish and Wildlife Service Staff briefs Regional Director Robyn Thorson on Lake Superior Issues and Station Accomplishments

Regional Director Robyn Thorson visited the Ashland Fishery Resources Office (FRO), Whittlesey Creek National Wildlife Refuge, and Iron River National Fish Hatchery (NFH) in October. Ashland FRO staff presented "chapters" in a presentation that briefed Robyn on station goals, priorities, and primary accomplishments. A site on Whittlesey Creek, west of Ashland, was visited. We discussed and observed stream habitat loss, watershed and instream-habitat restoration, fish passage, and brook trout rehabilitation. Ted Koehler, Henry Quinlan, and Mark Dryer showed Robyn how fish habitat was enhanced and erosion controlled by adding woody debris and structures to the stream. Jonathan Pyatskowit and Lee Newman demonstrated electrofishing and captured a good

number of trout and salmon, including brook trout that were recently stocked by Iron River NFH.
Mark Dryer, Ashland FRO

-USFWS

Biologist Lee Newman from the Ashland Fishery Resources Office discusses his catch to Regional Director Robyn Thorson during a visit to Whittlesey Creek National Wildlife Refuge.

Columbia Fishery Resources Office welcomes Two Emergency Hire Technicians

Columbia Fishery Resources Office (FRO) welcomes Cliff Wilson and Brian Bennett as emergency hire technicians on our pallid sturgeon monitoring program staff. They have bachelor's degrees in fish and wildlife biology from the University of Missouri-Columbia. Cliff previously worked with shovelnose sturgeon at the U.S. Geological Survey-Columbia Environmental Research Center. Brian came to us after a six-month position sampling fish on streams and rivers with the Wyoming Game and Parks Commission. Their energy and enthusiasm contributed to our ability to finalize the sampling season of the sturgeon project. We look forward to their continuing efforts as we move into the sturgeon gillnetting season. Filling two emergency hire technician positions allows us to complete our commitment to the Corps of Engineers on the sturgeon monitoring project following the loss of one of our full-time staff to the Missouri Department of Conservation.
Joanne Grady, Columbia FRO

Ashland Fishery Resources Office hosts a Volunteer Appreciation Picnic

The Ashland Fishery Resources Office (FRO) and the Whittlesey Creek National Wildlife Refuge hosted a picnic to honor their volunteers. Volunteers assisted with fisheries field work and outreach projects during the year, providing the Ashland FRO with more than 500 hours of assistance during 2004. Volunteers who could not attend the picnic were contacted and thanked by mail. The Ashland FRO continues to benefit from the hard work of volunteers through community outreach and public support. Our number of volunteers and their effort grows each year.
Joan Bratley, Ashland FRO

-USFWS

Ashland Fishery Resources Office (FRO) and Whittlesey Creek National Wildlife Refuge honored their volunteers with a picnic. The FRO received over 500 hours of assistance during 2004.

Columbia Fishery Resources Office Technician starts Graduate School

Biological Science Technician Jennifer Johnson, Columbia Fishery Resources Office (FRO), began her Master's degree program in Fisheries and Wildlife at the University of Missouri, Columbia. Jennifer's research will focus on the reproductive development of speckled chubs, silver chubs, and sicklefin chubs in relation to environmental variables. The construction of dams on the Missouri River has impacted native fish populations, water temperature, sediment transport, and the flow regime.

Native chub species have declined in abundance throughout most of their historic range since the construction of the main stem dams. Very little is known about the reproductive behavior of these four species. A return to a more "natural" hydrograph for the Missouri River has been proposed by the Fish and Wildlife Service and by the National Research Council as a tool to recover the endangered pallid sturgeon as well as other native species. These four species of native chubs may serve as surrogate species to detect improvements in the warm water fish community. Jennifer will be working with the Columbia FRO, the Missouri Cooperative Fish and Wildlife Research Unit at the University of Missouri as well as the U.S. Geological Survey Columbia Environmental Research Center. Evaluation of the responses of native fish species to changes in habitat or flow modifications on the Missouri River will provide more immediate feedback to the biological successes or failures of those modifications. The data collected and analyzed as a result of this project will evaluate the relationships between spawning and changes in environmental variables. The information derived from this project will allow the Fish and Wildlife Service to assist state resource agencies with making sound decisions.
Jennifer Johnson, Columbia FRO

Great Lakes - Big Rivers Regional Fisheries Offices

Regional Office, 1 Federal Drive, Fort Snelling, MN 55111-4056; 612/713-5111
Gerry Jackson (*gerry_jackson@fws.gov*)

Michigan

Alpena Fishery Resources Office
Federal Building; 145 Water Street
Alpena, MI 49707
Jerry McClain (*jerry_mcclain@fws.gov*)
989/356-3052

Jordan River National Fish Hatchery
6623 Turner Road
Elmira, MI 49730
Rick Westerhof (*rick_westerhof@fws.gov*)
231/584-2461

Ludington Biological Station
229 South Jebavy Drive
Ludington, MI 49431
Dennis Lavis (*dennis_lavis@fws.gov*)
231/845-6205

Marquette Biological Station
1924 Industrial Parkway
Marquette, MI 49855
Gary Klar (*gerald_klar@fws.gov*)
906/226-6571

Pendills Creek/Sullivan Creek
National Fish Hatchery
21990 West Trout Lane
Brimley, MI 49715
Curt Friez *(curt_friez@fws.gov)*
906/437-5231

Missouri

Columbia Fishery Resources Office
101 Park Deville Drive; Suite A
Columbia, MO 65203
Tracy Hill (*tracy_hill@fws.gov*)
573/234-2132

Neosho National Fish Hatchery
East Park Street
Neosho, MO 64850
David Hendrix (*david_hendrix@fws.gov*)
417/451-0554

Illinois

Carterville Fishery Resources Office
9053 Route 148, Suite A
Marion, Illinois 62959
Rob Simmonds (*rob_simmonds@fws.gov)*
618/997-6869

Wisconsin

Ashland Fishery Resources Office
2800 Lake Shore Drive East
Ashland, WI 54806
Mark Dryer (*mark_dryer@fws.gov*)
715/682-6185

Genoa National Fish Hatchery
S5689 State Road 35
Genoa, WI 54632-8836
Doug Aloisi (*doug_aloisi@fws.gov*)
608/689-2605

Green Bay Fishery Resources Office
2661 Scott Tower Drive
New Franklin, WI 54229
Mark Holey (*mark_holey@fws.gov*)
920/866-1717

Iron River National Fish Hatchery
10325 Fairview Road
Iron River, WI 54847
Dale Bast (*dale_bast@fws.gov*)
715/372-8510

LaCrosse Fish Health Center
555 Lester Avenue
Onalaska, WI 54650
Richard Nelson (*rick_nelson@fws.gov*)
608/783-8441

LaCrosse Fishery Resources Office
555 Lester Avenue
Onalaska, WI 54650
Pamella Thiel (*pam_thiel@fws.gov*)
608/783-8431

Fish Lines
Region 3, Great Lakes/Big Rivers
2004 Vol. 3 No. 1

U.S. Fish & Wildlife Service
Region 3
Divsion of Fisheries
1 Federal Drive
Ft. Snelling, MN 55111

Phone: 612/713-5111

Questions or comments concerning ***Fish Lines*** can be addressed to Dave Radloff, 612/713-5158 or email at david_radloff@fws.gov

RECYCLED PAPER

Printed on 30% Recycled by Fiber Weight Paper

Windows in time

A Glimpse into our Proud Past

In the early 1900's, shirt buttons were made from the shells of native mussels harvested from the river. Pearl button factories could be found up and down the Mississippi River. Even now, shells can be found at old factory sites that have button blanks punched from them. As plastic was developed in the late 1940's, the business of making buttons from mussel shells was discontinued. The Fairport National Fish Hatchery in Iowa helped maintain mussel populations by culturing many species of freshwater mussels.

Fish Lines is produced by the Fisheries Progam, Region 3, U.S. Fish & Wildlife Service, Ft. Snelling, Minn. Items included are selected from monthly reports submitted by Region 3 fisheries offices. Photos included are used by permission and may be copyrighted.
Questions or comments concerning ***Fish Lines*** should be addressed to Dave Radloff, 612/713-5158 or email at david_radloff@fws.gov